REMARKS

Reconsideration of the Office Action is respectfully requested.

Claims 2 - 11 and 13 - 23 are in the application.

The present invention is directed to removing a residue from a semiconductor substrate by applying a gas and/or vapor to which the residue is reactive while the temperature of the substrate is at an elevated level. In accordance with a further step, the substrate is exposed to ultraviolet radiation simultaneous with the gas/or vapor applying step, and the exposing and applying steps are continued at least until the residue is rendered to be soluble in the deionized water.

Independent claims 1 and 12 have been re-written herein as claims 20 and 22. These claims more clearly highlight the step of applying ultraviolet radiation to the substrate. It is the combination of the gas or vapor, heat, and ultraviolet radiation which provides the result achieved by the invention.

The claims stand rejected as being obvious over Vaartstra Patent No. 6,242,165 in view of Sugino Patent No. 5,578,133. The rejection as applied to the claims which are presented herein is respectfully traversed.

Vaartstra teaches removing a residue with the use of a fluid in a supercritical state. However, in Vaartstra, the process is simply one of solvation (Col. 5, line 7), i.e., the fluid does not react with the residue as called for the present claims. Thus, the removal process in Vaartstra is fundamentally different than in the present invention.

Additionally, Vaartstra does not teach the step of exposing the substrate to ultraviolet radiation. This is recognized in the Office Action, and the Sugino reference is utilized as a secondary teaching to provide ultraviolet radiation.

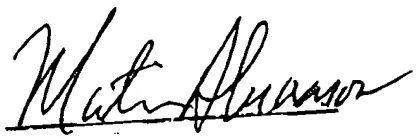
However, Sugino merely teaches the activation of a halogen with ultraviolet radiation to etch, and thus remove metal from a surface. While Vaartstra discloses the use of some of the same substances used by Applicants (as a supercritical fluid, not as a gas or vapor), there is no teaching in Sugino to activate any of these substances with ultraviolet radiation, only a halogen (which is not used in Applicants' process). Hence, there is no suggestion in Sugino to modify Vaartstra by applying UV radiation to any of the substances in Vaartstra which are used in Applicants' process, and the combination of references cannot be made.

Moreover, Vaartstra requires the use of a supercritical fluid, i.e., this is essential or critical to the Vaartstra process. However, if the supercritical fluids of Vaartstra were exposed to ultraviolet radiation, breakdown would result and Vaartstra would no longer have supercritical fluids, thus rendering the process produced by the combination of references to be inoperative. This is made clear by the examples given on page 8 of the present application where it states that NH_3 (a substance used by Vaartstra) breaks down upon being exposed to ultraviolet radiation.

For each of the above reasons, it is submitted that the claims presented herewith are patentable, and a Notice of Allowance is respectfully solicited.

If the Examiner believes that a telephone conference would advance the prosecution of the application he is respectfully urged to contact the undersigned at the telephone number below.

Respectfully submitted,



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APPENDIX A

Version of Amendments to Claims with Markings to Show Changes Made

Please amend claims 2, 13 and 14 as follows:

-- 2. (Amended) The method of claim [1] 21 wherein the gas and/or vapor is comprised of at least one member selected from the group consisting of amines, alcohols, thiols, ammonia, sulfur dioxide, sulfur dioxide and oxygen, sulfur trioxide, hydrogen sulfide, carbon dioxide, carbon monoxide, carbon sulfide, carbonyl sulfide, hydrogen peroxide, and water.

13. (Amended) The method of claim [12] 21 wherein after the gas is applied, the substrate is rinsed with deoinized water.

14. (Amended) The method of claim [12] 21 wherein the gas includes at least one member consisting of ammonia, hydrogen and sulfur dioxide.